

# The Effect of the Application of Tpack-Based Learning on the Motivation and Learning Achievement of Students of Public Elementary School 1 Sokanandi on PJOK Lessons

Imam Santosa

Magister Pendidikan Dasar, Universitas Muhammadiyah Purwokerto

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## ABSTRACT

*This study aims to determine the effect of the application of TPACK-based learning on the learning motivation of SD Negeri 1 Sokanandi students towards PJOK lessons. The type of research used is pseudo-experimental research using control classes and experimental classes. Student learning motivation data is measured using a questionnaire instrument while learning achievement uses a post test instrument. The data obtained was analyzed using the help of SPSS 2023 for windows. From the results of the analysis, it was found that there was an effect of the application of TPACK-based learning on student motivation and learning achievement at SD Negeri 1 Sokanandi in PJOK lessons.*

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### Corresponding Author:

**Imam Santosa**

Magister Pendidikan Dasar, Universitas Muhammadiyah Purwokerto

Jl. KH. Ahmad Dahlan, Kembaran, Kabupaten Banyumas, Jawa Tengah 53182

Email:

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## 1. INTRODUCTION

Physical Education, Sport and Health (PJOK) requires learning innovations based on technology, pedagogy and content knowledge (TPACK) to improve the quality and attractiveness of learning. This proposal covers the development and implementation plan of TPACK-based physical education learning innovations to create a more effective and enjoyable learning experience.

Physical Education, Sports, and Health (PJOK) has a central role in shaping the character, health, and physical skills of students. However, the challenges faced by PJOK education today are increasingly complex with the changing learning paradigm and advances in information technology. Modern education requires strategies that are more innovative and relevant to the times in order to achieve optimal learning objectives.

The correct and appropriate utilization of technology can enrich the learning atmosphere and develop interactive patterns that can increase students' ability to understand. Technology-based learning is a new and rapidly developing field in learning technology. The use of tools, educational and teaching equipment in schools began to be adapted to technological developments along with the revolution in science and technology, changes in society, understanding how children learn, advances in communication and information media gave its own meaning to educational activities. This is in line with the opinion of Y Suyitno (2021: 302) who states that "Whatever the form, the proper use of Information Technology in learning brings about changes in the tradition or culture of learning for the better".

Motivation comes from the Latin word, namely "movere" which means drive or driving force. According to Fillmore H. Stanford in the book Mangkunegara (2017: 93) says that "motivation as an energizing condition of the organism that services to direct that organism towards the goal of a certain class" (motivation as a condition that moves humans towards a certain goal). According to Sardiman (2018: 73), motive can be said to be a driving force from within and within the subject to carry out certain activities in order to achieve a goal.

In learning activities, motivation is needed to arouse students' passion for learning so that learning activities can run well. The definition of learning motivation according to Sardiman (2018: 75) is "The overall driving force within students that gives rise to learning activities, which ensures the continuity of learning activities and provides direction to learning activities, so that the goals desired by the learning subject can be achieved". Uno (2017: 23), says that learning motivation is an internal and external drive in students who are learning to make changes in behavior behavior, generally with several indicators or elements that support.

Nana Syaodih Sukmadinata (2005: 61) explains motivation is the force that drives individual activities, conditions within individuals that encourage or move in individuals to carry out activities to achieve goals. As with learning motivation, the encouragement that exists within students to achieve maximum learning results. Students will make various efforts to get satisfactory results if they have high motivation. This agrees with Sumadi Suryabrata (2002: 70) who explains that motivation is a condition in a person's personality that encourages people to carry out certain activities to achieve goals.

From several definitions of learning motivation according to the experts above, it can be concluded that learning motivation is an impetus that arises both from within and outside the student, which is able to generate enthusiasm and enthusiasm for learning and provide direction to learning activities so that the desired goals can be achieved.

According to Tambunan (2015: 196), intrinsic motivation and extrinsic motivation are types of motivation based on their sources. Intrinsic motivation, is motivation that is generated from a person. This motivation usually arises because of a person's hopes, goals and desires for something so that he has the enthusiasm to achieve it. Meanwhile, extrinsic motivation is something that is expected to be obtained from outside a person. This motivation is usually in the form of the value of a material, for example, rewards in the form of money or other intensive obtained for an effort that has been made.

Ngalim Purwanto (2002: 70) suggests that there are three functions of motivation, namely encouraging students to do, determining the direction of action and selecting actions. Students have high learning energy in achieving success in their learning. Students can determine what actions to do that are harmonious to achieve goals, by setting aside actions that are not beneficial to these goals. The function of learning motivation can be interpreted as a force or force within students that moves or generates learning activities, ensures that learning activities continue and listens to activities on the goals to be achieved.

Motivation will determine the intensity of learning efforts for students. The high and low learning motivation that students have will be shown in learning achievement. Optimal learning achievement if there is high motivation in learning. The more appropriate the motivation, the more successful the students will be in achieving the desired learning achievement.

Learning achievement basically comes from two syllables, namely achievement and learning. Learning achievement itself means a standard test to measure skills or knowledge for someone in one or more of the lines of work or study. Meanwhile, according to the popular dictionary, achievement is the result of something that has been achieved (Purwodarminto, 1979: 251). Then the definition of learning according to Winkel is all mental or psychological activities that take place in active interaction in an environment that produces changes in the management of understanding.

Learning achievement according to Sudjana (2005: 3) is the result of learning achieved according to certain criteria, where the results assessed are the results in learning, changes in behavior which include cognitive, affective, and psychomotor aspects.

Learning achievement according to Suryabrata (2002: 23) states that learning achievement is the result achieved from practice, experience supported by awareness. Learning achievement achieved by a person is the result of the interaction of various factors that influence it both from within (internal factors) and from outside the self (external factors) of the individual (Ahmadi and Supriyono, 2008: 138). The internal factors (from within) include intelligence, motivation, attitude, interest, integration talent. While external factors include family factors, school factors, community factors.

Based on several definitions of learning achievement above, it can be concluded that learning achievement is the result of the assessment of learning activities that have been carried out. Learning achievement is the result of measuring and assessing learning efforts. By knowing learning achievement, it can be known where the child is in the class. As stated by Sutratinah (2001: 43) that "learning achievement is an assessment of the results of activity efforts expressed in the form of symbols, numbers, letters and sentences that can reflect the results that have been achieved by each child in a certain period".do and is a form of final formulation given by

the lecturer to see where the student's abilities are expressed in the form of symbols, numbers, letters and sentences that can reflect the results that have been achieved.

Febrini (2017: 215) states that the aspects of learning achievement are: a. Cognitive domain Such as knowledge, understanding, application and assessment. b. Affective domain Includes behavioral dispositions such as feelings, interests, attitudes, emotions, and values. c. Psychomotor domain Contains behaviors that emphasize skills.

In general, according to Baharuddin (2009: 19) the factors that affect learning achievement can be divided into two categories, namely; Internal factors (within the individual) and External (outside the individual). These two factors are things that can affect individual learning achievement. These internal factors consist of physiological and psychological factors. External factors can be divided into two, namely the social environment such as the school social environment which includes teachers, administration and peers, the social environment of the community, and the family social environment such as family tension, parental traits, family demographics, socio-economic status. while the non-social environment consists of the natural environment, instrumental factors, subject matter factors.

Along with technological advances, the concept of TPACK (Technological Pedagogical Content Knowledge) emerged as a theoretical foundation that recognizes the importance of integration between technological knowledge, pedagogy, and content knowledge in educational contexts. In the context of PJOK learning, it is faced with the task of combining technological sophistication with effective learning methods and a deep understanding of the content of the learning material.

Based on preliminary observations of PJOK theory learning carried out in the fifth grade of SD Negeri 1 Sokanandi, Banjarnegara District, various problems were found in the classroom, including students looking inactive during learning, decreasing student motivation and learning achievement, the way teachers teach is still conventional, teacher-centered and has not maximally utilized technology as a medium of learning and facilities facilities and infrastructure schools are still limited. Learning PJOK theory in class V SD Negeri 1 Sokanandi feels not optimal in utilizing or empowering existing learning media, teachers use the lecture method, the reality of the situation also shows that students are in a passive state during the learning process students sit quietly while taking notes and only using student books as the only learning resource so that it has several negative effects on the learning process including decreased student motivation and learning achievement.

In learning activities, motivation is needed to arouse students' passion for learning so that learning activities can run well. The definition of learning motivation according to Sardiman (2018: 75) is "The overall driving force within students that gives rise to learning activities, which ensures the continuity of learning activities and provides direction to learning activities, so that the goals desired by the learning subject can be achieved". Uno (2017: 23), says that learning motivation is an internal and external encouragement in students who are learning to make changes in behavior, generally with several indicators or elements that support. From several definitions of learning motivation according to the experts above, it can be concluded that learning motivation is an impetus that arises both from within and outside the student, which is able to generate enthusiasm and enthusiasm for learning and provide direction to learning activities so that the desired goals can be achieved.

Learning achievement is the result of measuring and assessing learning efforts. By knowing learning achievement, it can be known the position of children in the class. As stated by Sutratinah (2001: 43) that "learning achievement is an assessment of the results of activity efforts expressed in the form of symbols, numbers, letters and sentences that can reflect the results that have been achieved by each child in a certain period".do and is a form of final formulation given by lecturers to see to what extent the ability of students is expressed in the form of symbols, numbers, letters and sentences that can reflect the results that have been achieved.

Based on the explanation above, researchers are interested in examining the application of TPACK-based learning for fifth grade students of SD Negeri 1 Sokanandi in PJOK lessons.

The main purpose of this study is to determine the effect of learning motivation on the learning achievement of PJOK students who use TPACK-based learning implementation.

## 2. METHODS

This research uses a quantitative approach. According to Sugiyono (2019), quantitative research is a type of research that produces quantitative data processed with statistical techniques. The type of research used in this research is pseudo-experimental research. The sample taken in this study were fifth grade students of SD Negeri 1 Sokanandi as many as 20 students, consisting of 12 boys and 8 girls.

In this study, researchers used several research instruments in the form of questionnaires and written tests. The questionnaire provided is a questionnaire to measure learning motivation and a written test to measure student learning achievement.

Variables	Data Collection Technique	Data Collection Instruments
Student learning achievement	Test	Written (Description)
Student learning motivation	Observation	Observation Sheet

### 3. RESULTS AND DISCUSSION

TPACK is a conceptual framework that integrates technology, pedagogy and content knowledge to improve learning effectiveness (Mishra & Koehler, 2006). In the context of PJOK learning, TPACK enables teachers to intelligently combine technology with content knowledge and teaching methods.

The introduction of TPACK creates a foundation for understanding the importance of integrating technology, pedagogy and content knowledge in the context of learning. TPACK, as a framework, was introduced by Mishra and Koehler in 2006 as a concept that summarizes knowledge of three critical domains to improve the quality of learning, especially in the digital era.

The purpose of this study was to determine the effect of TPACK-based learning on students' learning motivation and learning achievement by treating the experimental class in the form of TPACK-based learning activities in PJOK lessons. This research is included in associative research using quantitative analysis methods (data in the form of numbers) which aims to determine the relationship or influence between two or more variables. The study population was fifth grade students of SD Negeri 1 Sokanandi in the 2023/2024 academic year. The sample determination was carried out using observation techniques in the form of questionnaires and tests, it was found that: class V SD Negeri 1 Sokandi as the experimental group and class V SD Negeri 3 Parakancanggih as the control group.

In presenting data related to research problems, the questionnaire method is used which is distributed to a number of respondents with the aim of knowing the extent of the influence of TPACK-based learning on the motivation of class V SD Negeri 1 Sokanandi in the 2023-2024 academic year.

The steps used in this study include questionnaires, tests, documentation. This step makes it easier to obtain data on the results of the study. To obtain the data in question, a questionnaire was distributed to respondents as many as the sample to be determined in the next sheet. Documentation is used to obtain data on the implementation of the study. Post test is carried out to see and obtain data and information on the learning achievement of students related to PJOK learning. While the technique used by the existing population is class or cluster sampling technique. From 410 students of SD N 1 Sokanandi, a sample of 20 students was taken, namely class V as respondents.

In this sub will describe about student learning motivation when applying TPACK in PJOK learning. The data analyzed are the results of the Y1 variable questionnaire (student learning motivation). The data analysis used is descriptive statistical analysis and product moment analysis. Data analysis conducted to measure how high student learning motivation is when using TPACK-based learning media in PJOK subjects.

The following is a recapitulation of the results of research on the application of TPACK-based learning to student learning motivation:

No.	Research Hypothesis	Research Results	Interpretation Criteria	Interpretation	Conclusion
1.	$H_a$ : There is a positive and significant effect of the application of TPACK-based learning on student learning motivation in PJOK subjects. at SDN 1 Sokanandi	Significance in the Sig.(2-tailed) is 0.006 and $t_{hitung} = 2,884$	-Probability < 0,05 Significant because the value of Sig.(2-tailed) $\leq 0.05$ . $T_{tabel} = -2,000$ (level 5%), which is significant because $t_{hitung} > t_{tabel}$	$H_a$ Retrieved	There is a significant effect of the application of TPACK-based learning on student learning motivation in PJOK subjects at SDN 1 Sokanandi

Based on data presentation and analysis, the *mean* value of learning motivation of the experimental class is 84.25, while that of the control class is 76.50. So it can be concluded that the average (*mean*) value of the experimental class questionnaire is greater than the average (*mean*) value of the control class questionnaire.

The next data analysis is hypothesis prerequisite testing, namely data normality and homogeneity tests. The normality and homogeneity test of the research data is seen from the *Asymp. Sig.* If *Asymp. Sig.* > 0.05 then the data is said to be normally distributed and homogeneous. The data normality test uses the *Kolmogorov-smirnov* test. The results of testing the normality of the experimental class learning motivation questionnaire data were 0.200 and in the control class.

0,200. Because the *Asymp. Sig* value of both classes > 0.05, the questionnaire data of both classes is declared normally distributed. After the data is declared normally distributed, the next is the homogeneity test of learning motivation data. The results of the homogeneity of the learning motivation value data obtained *Sig.* 0,814. *Sig* value. 0.814 > 0.05 so the data is declared homogeneous.

Data that has gone through the prerequisite test (normality and homogeneity) and has been declared normally distributed and homogeneous, then it can be continued with the *t-test* analysis. The results of the *t-test* at SD Negeri 1 Sokanandi who applied TPACK-based learning showed significant results, the value of *Sig.* (2-tailed) in the *t-test* is 0.006 and  $t_{(hi) (tung)}(2.884)$

>  $t_{tabel} (2,000)$ ,. Based on the decision-making criteria of  $0.006 < 0.05$  and  $t_{(hi) (tung)}(2.884) > t_{tabel} (2,000)$ , then  $H_0$  is rejected and  $H_a$  is accepted. So it can be concluded that there is a significant influence on learning motivation between students who take part in TPACK-based learning and students who are given learning materials with conventional.

The following is a recapitulation of the results of research on the use of concrete (real) media on student learning outcomes:

No.	Research Hypothesis	Research Results	Interpretation Criteria	Interpretation	Conclusion
1.	$H_a$ : There is a positive and significant effect of the application of TPACK-based learning on learning achievement students in the subject of PJOK at SDN 1 Sokanandi	Significance in the <i>Sig.</i> (2-) table (2-tailed) is 0.017 and $t_{hitung} = 2,471$	-Probability < 0,05 Significant because the value of <i>Sig.</i> (2-tailed) ≤ 0.05. $T_{tabel} = - 2,000$ (level 5%), which is significant because $t_{hitung} >$	$H_a$ Retrieved	There is a positive and significant effect of the application of TPACK-based learning on student learning motivation in PJOK subjects at SDN 1 Sokanandi.

Based on the presentation and analysis of data, the average (mean) value of the *post test* of PJOK learning outcomes of the experimental class is 81.43 while in the control class is 72.50. So it can be concluded that the average value (mean) of the experimental PJOK learning outcomes *post test* is greater than the average value (mean) of the control class PJOK learning outcomes *post test*.

The next data analysis is hypothesis prerequisite testing, namely data normality and homogeneity tests. The normality and homogeneity test of the research data is seen from the *Asymp. Sig.* If *Asymp. Sig.* > 0.05 then the data is said to be normally distributed and homogeneous. The data normality test uses the *Kolmogorov-smirnov* test. The results of testing the normality of the *post-test* data on the PJOK learning outcomes of the experimental class were 0.066 and in the control class 0.189 so that > 0.05. It can be concluded that the data on students' PJOK learning outcomes are normally distributed. Besides the data is declared normally distributed. Next is the homogeneity test of reading ability data. The results of the homogeneity of the data on the value of math learning outcomes obtained *Sig.* 0,218. *Sig* value. 0.218 > 0.05 so the data is declared homogeneous.

Data that have gone through prerequisite tests (normality and homogeneity) and have been declared normally distributed and homogeneous, can be continued with *t-test* analysis. The results of the *t-test* at SDN 1 Sokanandi which uses TPACK-based learning show significant results, the value of *Sig.* (2-tailed) in the *t-test* is 0.017 and  $t_{(hi) (tung)}(2.471) > t_{tabel} (2,000)$ ,. Based on the decision-making criteria of  $0.017 < 0.05$  and  $t_{(hi) (tung)}(2,471) > t_{tabel} (2,000)$ , then  $H_0$  is rejected and  $H_a$  is accepted. So it can be concluded that there is a significant influence on

the learning outcomes of PJOK between students who take part in learning with the use of concrete objects (real media) with students who are given learning materials with the lecture method.

The results of this study indicate that the use of TPACK-based learning is better than the provision of material in conventional learning. By using TPACK-based learning, students in the experimental class became more enthusiastic during the learning process. When the learning process takes place, students understand the material better because in addition to verbal, students can also observe with visual displays presented by educators. This results in better student learning outcomes.

#### 4. CONCLUSIONS

Based on the results of the research that has been conducted and the discussion that has been presented in the previous chapter, the conclusion obtained in this study is that there is a significant influence in the application of TPACK-based learning on the motivation and achievement of grade V students at SD Negeri 1 Sokanandi. Based on the research conducted and the arguments put forward, it can be concluded that the application of TPACK-based learning in PJOK lessons at SD Negeri 1 Sokanandi can increase student motivation and learning achievement. In the future, researchers will strive to use TPACK-based learning implementation in other classes.

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